

Recommender systems are the essential background accessories of the electronic commerce, content providing, online media and various other application areas today. The main advantage of the recommender systems is the ability to help the visitors of online systems to alleviate the information overload by presenting relevant content to the particular user. On the other hand, recommender systems have the capability to increase the business value of an online service by, e.g., increasing the conversion rates and the quality of the service. The personalization is typically done by aggregating a vast amount of user interaction data but prominent content-based methods are also researched while several alternative techniques are to be mentioned as well.

The roots of the recommender systems are the information retrieval systems. The primary goal of information retrieval systems is to retrieve a list of items from a vast majority of items. The retrieval is typically based on a query issued by the user. In this case the retrieved list depends only on the query. Current recommender systems involve personalization into the information retrieval process. The primary goal of early recommender systems is to provide rating estimation on the items in the repository for a particular user. State of the art recommender systems focus on preference estimation in order to provide a list of items. In the background, both aspects are based on user modeling, utilizing various techniques, e.g., machine learning.

During the course, the recommender systems are put into context by introducing the basic concepts of the information retrieval. The course covers the following topics

- Web search
- Vector space model (tf, idf, tf-idf, cosine similarity)
- Evaluation in information retrieval
- Recommender systems
- Standard datasets
- Evaluation for recommender systems
- Collaborative and social filtering
- Content-based filtering
- Hybrid recommender systems
- Knowledge based recommenders
- Context aware recommender systems
- Group recommendations
- Graph based methods

Participating the course, the students will be aware the basic concepts of recommender systems and understand how various recommendation techniques function. Based on the acquired knowledge, the students will be able to design and implement basic recommender system algorithms.